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Blood Pressure for Members of Farm Families

Plague Infection in the United States



FEDERAL SECURITY AGENCY

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Public Health Reports

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PHYSICAL IMPAIRMENTS OF MEMBERS OF LOW-INCOME FARM FAMILIES—11,490 PERSONS IN 2,477 RURAL FAMILIES EXAMINED BY THE FARM SECURITY ADMINISTRATION,¹ 1940²

VII. VARIATION OF BLOOD PRESSURE AND HEART DISEASE WITH AGE; AND THE CORRELATION OF BLOOD PRESSURE WITH HEIGHT AND WEIGHT

By MARY GOVER, *Biostatistician, Public Health Service*

This series of studies made on physical examination findings presents the prevalence of impairments and chronic diseases found among low-income farm families residing in selected areas of the country. These studies contribute to our knowledge of the prevalence of chronic diseases by the addition of observations on farm families to the existing data from other sources.

From November 1939 through November 1940 the Farm Security Administration made physical examinations of members of borrower families as part of a rehabilitation program. They examined the members of all borrower families residing within selected counties; thirteen of the counties were in southern States and six in northern or intermediate sections. The mean age of the total population examined (9,776 whites and 1,714 Negroes) is relatively young compared with that of the total population of the United States owing to the fact that young heads of families were selected for rehabilitation loans. The income of these examined families is comparatively low; the Bureau of Agricultural Economics estimates an average annual net income of \$767 per farm for all farms in 1940, while a comparable average annual net income for all rural rehabilitation farms, estimated

¹ Now the Farmers Home Administration.

² From the Division of Public Health Methods, Public Health Service, in cooperation with the Farmers Home Administration, Department of Agriculture.

This is the seventh (76) in a series of papers dealing with physical defects found on examination of members of low-income farm families residing in 19 localities in the United States. The physical findings were coded and transferred to punchcards by the Farm Security Administration under the supervision of Jesse B. Yankey. Acknowledgment is made to Dr. S. D. Collins for critical suggestions and advice throughout the preparation of the studies.

by the Farm Security Administration, is \$500 based on data for 1940. Further general details of the examined population can be obtained from a preceding study in this series (16, I).

All members of borrower families (actually 91 percent of the total) were brought by automobile to examination clinics set up at central positions in each county. Each team of examining physicians consisted of an eye, ear, nose and throat specialist, an internist, gynecologist, psychologists, laboratory workers and a nurse. The same examination form was in use in all localities in an effort to keep the examining procedure uniform. Blood pressures were taken by physicians who recorded manometer readings. The subject, 15 years or over, was usually in a sitting position and blood pressures were read without regard to a specific rest period. One reading only was made routinely on each individual. To what extent blood pressure readings in these data have been affected by environmental factors is uncertain, but environmental influences are probably no greater in these results than in those of other examined groups. Some of the localities were isolated and their populations not well acquainted with hospital or clinic facilities; many persons and entire groups, however, were very cooperative as was shown by the results of the psychometric tests.

Whereas, records of blood pressure are objective and therefore give a minimum of variation associated with examiner, the prevalence of diseases and defects in these data must be considered as representing average examination findings of a relatively small number of physicians. In recording the presence of diseases or defects the examining physician made a notation of his findings under the general headings of "mouth," "chest," "abdomen," etc., and also at the end of the examination form under "summary of defects" and "measures recommended for correction."

Distributions of Blood Pressure by Age for a Farm Population

Means of systolic and diastolic blood pressure at successive ages have appeared in medical literature from time to time since 1915. The chief sources of such information are studies on school children, insurance records, college students, industrial groups, Army officers, persons in homes for the aged, and general hospital cases and personnel. On the whole, the studies are of urban groups and made on persons of an average or above-average income status except those made in homes for the aged. The industrial groups examined were in establishments where investigations were made by the Public Health Service of possible hazards in connection with a particular industry. Insurance policyholders' records are of urban industrial groups of at least moderate income. In contrast, this study deals with an exclusively rural group of comparatively low-income status.

TABLE 1.—Mean systolic blood pressure for white persons in two age groups—members of rural borrower families examined by the Farm Security Administration, 1940

Geographic area	State	County	Number examined for blood pressure		Mean systolic blood pressure ¹ (mm.)		
					Male		Female
			Male	Female	15-44	45 and over	15-44
New England East North Central West North Central Mountain South Atlantic	Maine	Aroostook	212	209	155±0.71	143±1.78	131±0.80
	Ohio	Champaign	130	114	130±.94	137±2.56	126±1.02
	Indiana	Montgomery	110	106	130±1.10	143±2.16	126±1.27
	Missouri	Callaway	208	178	153±.74	145±1.65	134±2.47
	Nebraska	Howard	154	145	130±.93	145±2.32	148±3.63
	Colorado	Phillips	112	114	128±.88	141±2.59	155±3.97
	Virginia	Spotsylvania	51	45	131±1.78	153±4.38	161±4.81
	North Carolina	Avery	68	70	121±1.24	148±3.71	149±4.46
	South Carolina	Kershaw	186	174	140±1.16	169±2.34	152±1.28
	Georgia	North	141	128	132±.83	147±2.90	129±.90
East South Central	Florida	Levy	191	185	135±.94	150±2.15	121±.71
	Tennessee	Henderson	147	141	139±.85	150±3.82	129±.99
	Mississippi	Carroll	117	103	128±1.00	148±2.84	155±1.51
	Arkansas	Leflore	202	195	124±.79	138±2.14	135±.77
	Oklahoma	Pope	175	171	123±.67	138±1.81	125±.78
West South Central	Louisiana	Oktuskee	256	243	138±1.90	141±2.35	131±1.82
	Texas	Franklin	99	75	126±.85	140±2.89	120±1.14
		Panola	94	90	131±.96	140±2.89	120±1.14
		Williamson	93	94	126±.78	137±2.77	125±1.33
		Runnels	93	94	126±.78	137±2.77	125±1.33
19 localities			2,749	2,552	130±.23	146±.59	129±.26
North ²			926	868	131±.35	143±.87	129±.42
South ³			1,823	1,714	130±.29	148±.78	130±.33

¹ Means printed in italics are significantly higher than the mean for all localities; the difference is 3 or more times its probable error.

² "North" includes localities in the New England, East North Central, West North Central, and Mountain sections. "South" includes localities in the South Atlantic, East South Central, and West South Central sections.

Variability in mean systolic blood pressure³ for different geographic sections (table 1) is relatively slight. There are several localities, however, which deviate significantly from the mean of all localities. The blood pressure means recorded for males in Kershaw County, S. C., Levy County, Fla., and Henderson County, Tenn., and for females in Montgomery County, Ind., Kershaw County, S. C., and Franklin Parish, La., are significantly above the average. The reason

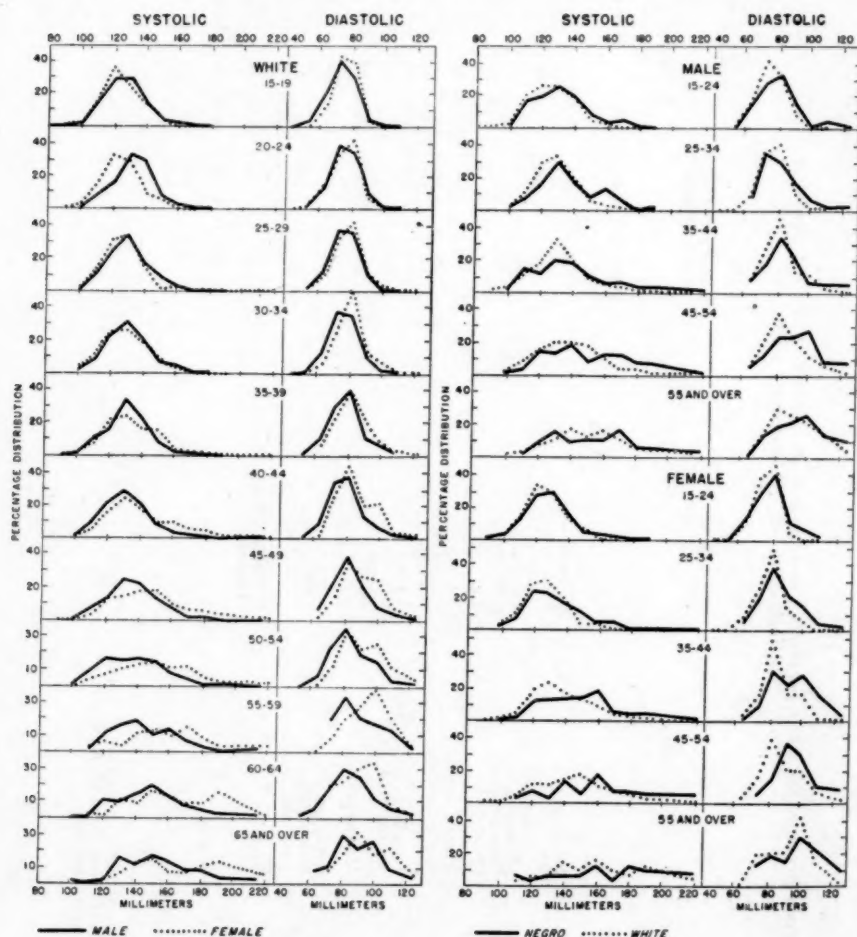


FIGURE 1.—Percentage distribution of systolic and diastolic blood pressure (millimeters of mercury) at specific ages for white and Negro males and females—members of rural borrower families examined by the Farm Security Administration, 1940.

³ Systolic blood pressure has been recorded on punchcards in millimeters. Since there is an obvious concentration on multiples of ten, the data have been tabulated in the intervals 85-94, 95-104 mm., etc. Diastolic blood pressure was coded in the intervals 80-89, 90-99 mm., etc. Actual centering points of these intervals of diastolic pressure were obtained from a hand tabulation of a sample of the records, and were used in the computation of means and standard deviations (tables 2 and 3).

for these relatively high means is not clear from the data; they occur mainly, however, among Southern groups. Blood pressure means are slightly but significantly higher in the South than in the North for males 45 years of age and over. Examinations for life insurance (18), however, show no association of mean blood pressure with altitude or latitude within the Temperate Zone; examinations of persons living temporarily in the tropics, including Army officers (23, 32, 38) indicate lower blood pressures there than in temperate or cold climates for the same ages.

Standard deviations of distributions of blood pressure by age in these data, for both systolic and diastolic pressure, increase after 40 years of age, the increase being marked after 50 years. There is no bimodal appearance to the distributions, however (fig. 1). From about 40 years of age on, means and standard deviations of both systolic and

TABLE 2.—Mean, median, and standard deviation of age-specific distributions of blood pressure—members of white rural borrower families examined by the Farm Security Administration, 19 localities, ¹ 1940

Age	White male				
	Systolic pressure ² (mm.)			Diastolic pressure ² (mm.)	
	Mean	Median	Standard deviation	Mean	Standard deviation
15-19.....	125.8±0.40	125.1±0.50	13.5±0.28	73.9±0.27	9.0±0.19
20-24.....	132.5±.60	132.4±.76	12.8±.43	76.8±.41	8.7±.29
25-29.....	130.9±.60	129.6±.75	13.8±.42	77.1±.39	9.0±.28
30-34.....	131.3±.55	130.1±.69	13.9±.39	77.2±.35	8.9±.25
35-39.....	132.1±.59	131.5±.74	15.2±.41	79.1±.38	9.8±.27
40-44.....	132.4±.64	130.8±.80	16.8±.45	79.9±.41	10.7±.29
45-49.....	138.7±.85	136.0±1.06	20.4±.60	83.1±.48	11.5±.34
50-54.....	141.1±1.02	138.1±1.27	24.2±.72	83.7±.53	12.5±.37
55-59.....	151.9±1.57	144.5±1.97	28.1±1.11	88.9±.77	13.8±.55
60-64.....	154.4±1.74	150.2±2.18	27.3±1.23	86.7±.95	14.9±.67
65 and over.....	159.4±1.92	154.7±2.40	28.3±1.35	89.2±1.05	15.4±.74
	White female				
	Systolic pressure ² (mm.)			Diastolic pressure ² (mm.)	
	Mean	Median	Standard deviation	Mean	Standard deviation
15-19.....	124.5±0.39	123.0±0.49	12.7±0.28	76.1±0.23	7.3±0.16
20-24.....	124.8±.50	124.1±.63	12.8±.35	76.5±.33	8.4±.23
25-29.....	127.5±.59	126.2±.74	14.4±.42	78.4±.37	9.1±.26
30-34.....	128.7±.54	127.8±.67	14.6±.38	80.4±.32	8.6±.22
35-39.....	133.4±.70	131.3±.88	18.4±.50	82.6±.46	10.6±.28
40-44.....	141.0±.94	135.6±1.18	23.5±.66	85.7±.46	11.4±.32
45-49.....	148.2±1.12	144.6±1.41	26.5±.79	88.5±.54	12.8±.38
50-54.....	158.0±1.66	152.8±2.08	31.5±1.18	90.9±.76	14.4±.54
55-59.....	167.4±2.20	164.5±2.75	32.4±1.55	93.5±.89	13.1±.63
60-64.....	162.9±2.77	155.5±3.47	26.6±1.96	89.1±1.25	12.0±.88
65 and over.....	174.4±3.19	173.3±4.00	31.7±2.26	95.6±1.51	15.0±1.06

¹ Listed in table 1.

² Distribution constants and probable errors of blood pressure readings are tabled. The probable error of the median is 1.25332 times the probable error of the mean.

diastolic pressure increase significantly in successive age groups (table 2 and figs. 1 and 2). The rate of increase in mean systolic blood pressure with age is also more rapid after approximately 40 years of age (figs. 3 and 4).

Sex differences in age-specific blood pressure are marked (table 2 and fig. 2). After approximately 35 years of age both means and standard deviations of systolic and diastolic pressure are significantly greater for females than males.

Distributions of blood pressure for Negroes have the same general characteristics as the white (fig. 1); mean systolic and diastolic pressures are, however, higher for Negroes in specific age groups (table 3 and fig. 2). Negro women between 35 and 54 years of age have particularly high average systolic and diastolic blood pressures relative to the white in these data. This relatively high age-specific mean blood

TABLE 3.—Mean, median, and standard deviation of age-specific distributions of blood pressure for Negro and white persons—members of rural borrower families examined by the Farm Security Administration, 9 localities¹ 1940

Age	Systolic pressure ² (mm.)			Diastolic pressure ² (mm.)	
	Mean	Median	Standard deviation	Mean	Standard deviation
Negro male					
15-24.....	132.1±0.98	130.0±1.23	18.4±0.70	79.9±0.70	13.1±0.50
25-34.....	136.7±1.69	133.1±2.11	18.4±1.19	82.6±1.28	14.0±.91
35-44.....	142.7±2.42	136.7±3.03	28.7±1.71	87.6±1.40	16.6±.99
45-54.....	152.4±1.97	146.4±2.47	28.4±1.40	92.7±1.21	17.4±.86
55 and over.....	162.8±2.46	160.0±3.09	32.3±1.74	96.9±1.37	17.9±.97
Negro female					
15-24.....	128.1±0.82	126.9±1.03	15.7±0.58	79.3±0.53	10.2±0.37
25-34.....	137.5±1.83	132.2±2.29	24.2±1.29	85.9±1.01	13.4±.71
35-44.....	154.2±1.93	150.3±2.41	29.7±1.36	93.6±.96	14.9±.68
45-54.....	172.4±2.90	164.6±3.64	35.2±2.05	97.7±1.27	15.4±.90
55 and over.....	179.4±4.32	181.3±5.41	36.8±3.05	99.2±2.07	17.6±1.46
White male					
15-24.....	125.7±0.48	125.3±0.60	13.9±0.34	75.4±0.30	8.7±0.21
25-34.....	129.4±.54	128.3±.68	13.6±.38	78.3±.35	8.8±.25
35-44.....	133.3±.70	131.3±.88	18.3±.50	81.8±.41	10.7±.29
45-54.....	142.0±1.00	138.8±1.26	24.2±.71	85.2±.53	12.8±.37
55 and over.....	158.2±1.55	154.1±1.95	30.4±1.10	91.2±.74	14.5±.53
White female					
15-24.....	125.9±.40	125.0±.50	12.3±.28	76.9±.24	7.3±.17
25-34.....	129.7±.57	128.4±.71	14.8±.40	79.9±.35	9.2±.25
35-44.....	140.5±.91	135.7±1.14	23.4±.64	84.8±.45	11.6±.32
45-54.....	152.1±1.46	148.1±1.83	29.8±1.03	87.6±.67	13.6±.47
55 and over.....	169.3±2.35	163.8±2.94	32.1±1.66	91.6±1.07	14.6±.75

¹ Spotsylvania County, Va., Kershaw County, S. C., Worth County, Ga., Levy County, Fla., parts of Carroll, Leflore, and Humphreys Counties, Miss., Pope County, Ark., Okfuskee County, Okla., Franklin Parish, La., and Panola County, Tex.

² See table 2, footnote 2.

pressure for Negroes compared with the white is substantiated by other observations (2, 10, 34). Age-specific means of systolic blood pressure for Negroes are high, however, in these farm data compared with those for Negroes recorded in the studies just referred to.

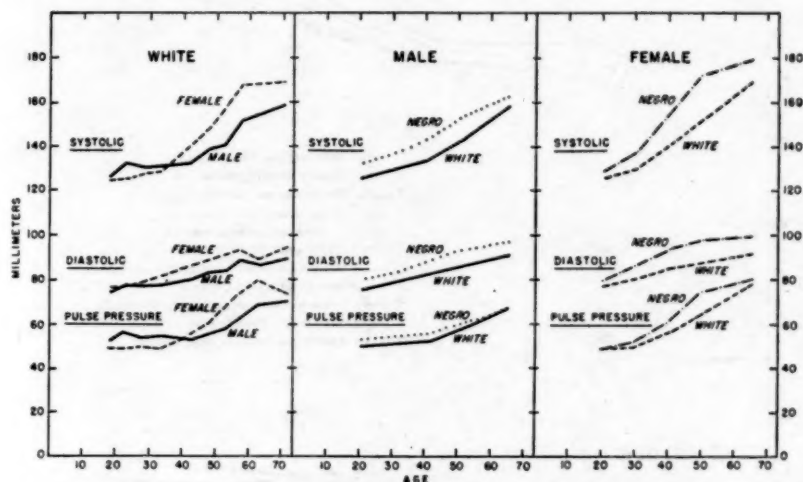


FIGURE 2.—Age-specific means of systolic and diastolic blood pressure and pulse pressure (millimeters of mercury) for white and Negro males and females—members of rural borrower families examined by the Farm Security Administration, 1940.

Age-specific Means of Blood Pressure in Data from Other Sources

The variation of mean blood pressure with age has been frequently demonstrated. Data from several sources are shown in figures 3 and 4. Although the level of mean blood pressure varies among data from different sources, the general aspects of a curve of mean blood pressure covering the entire life span are obvious. Mean systolic blood pressure rises rapidly with age until 17–19 years for boys and 15–16 years for girls, after which it declines somewhat or changes relatively little until middle age when the mean again increases with age, earlier and more rapidly for women than men. Mean systolic blood pressure shows a slight decline in extreme old age. Mean diastolic blood pressure also increases rapidly until 15–19 years of age, and then increases gradually throughout the remainder of the life span, the rate of increase being somewhat greater for women than men.

Age-specific means of systolic blood pressure, as they are recorded for the following groups, are on much the same level, namely, urban industrial workers, patients in hospital out-patient services, and United States Army officers (figs. 3 and 4). The Life Extension examinations on the other hand, are of an urban industrial group previously selected

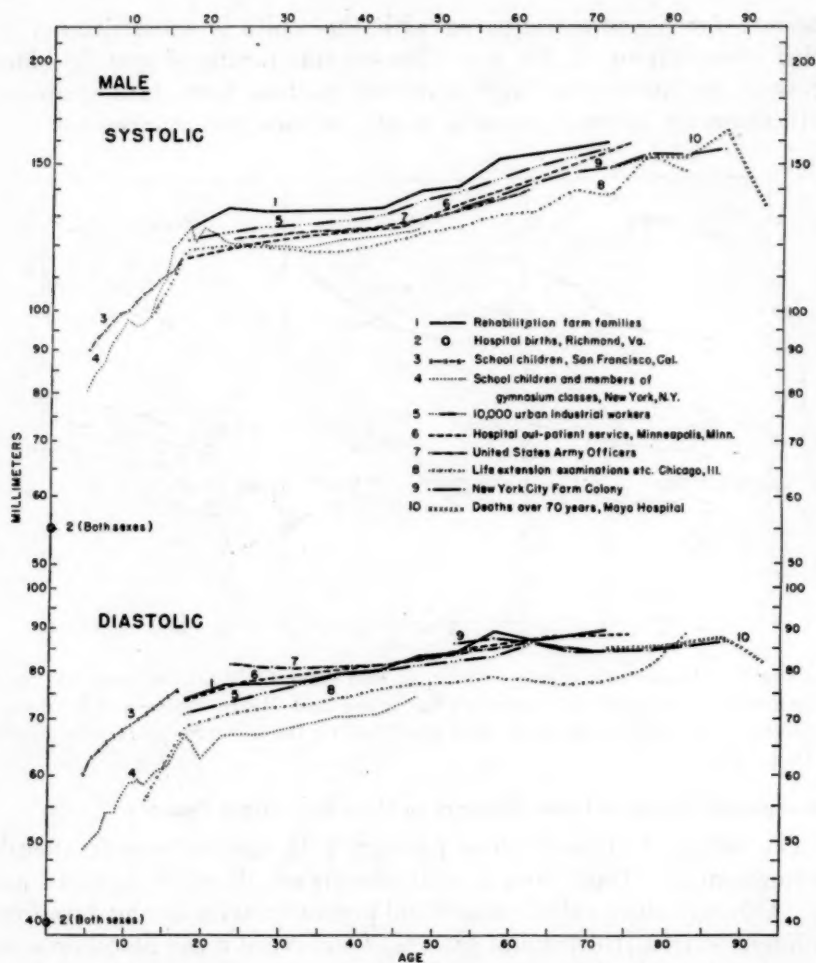


FIGURE 3.—Age-specific means of systolic and diastolic blood pressure for *white males* assembled from various sources (see note).

NOTE.—The following refers to both figures 3 and 4 unless otherwise stated:
Line 2: Rucker and Connell (33). Observations on 47 infants.

Line 3: Faber and James (12). Observations on 651 boys and 450 girls.

Line 4: Figure 3. Schwartz, Britten, and Thompson (36). Observations on 2,200 urban men and boys.

Line 4: Figure 4. Burlage (8). Observations on 1,684 women students and girls.

Line 5: Figure 3. Britten and Thompson (7). Observations on 10,000 male urban industrial workers.

for general good health and their blood pressure means are on a definitely low level. Examinations for life insurance also (1, 35, 41) are obviously of a selected group with respect to blood pressure, and their averages are so low at older ages, that their records have not

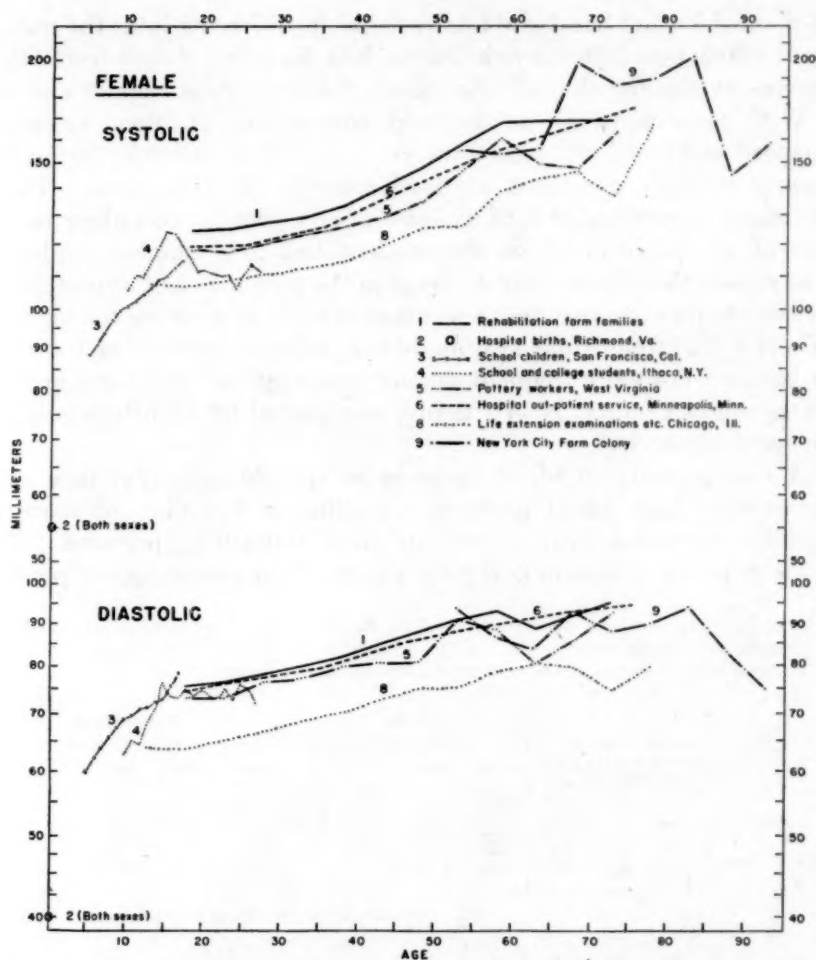


FIGURE 4.—Age-specific means of systolic and diastolic blood pressure for *white females* assembled from various sources (see note).

Line 5: Figure 4. Flinn et al. (14). Observations on 1,557 men and 873 women in industry.

Line 6: Wetherby (42). Observations on 2,282 men and 3,258 women of out-patient hospital service.

Line 7: Figure 3. Jenks (19). Observations on 1,139 Army officers.

Line 8: Robinson and Brucer (31). Observations on 7,478 men and 3,405 women urban policyholders.

Line 9: Miller (27). Observations on 853 men and 128 women residents of New York City Farm Colony.

Line 10: Willis and Smith (44). Observations on 371 hospital patients.

been included here. The examinations of low-income farmers and their families give mean systolic pressures that are definitely above those recorded for other groups. The levels of mean diastolic pres-

sure, on the other hand, are less variable in different data: the means for the farm population are similar to those for selected data from other sources except for the Life Extension Institute data (figs. 3 and 4).

With respect to an urban-rural comparison of blood pressure, Shepard and Diehl (37) record the prevalence of so-called hypertension among students examined at the University of Minnesota. Those examined were divided into five size-of-city groups, according to the size of the place in which the student had held longest residence. The results show an orderly decrease in the prevalence of hypertension as size-of-city increases, the percentage in rural areas being the highest. Wheeler (43) found that systolic blood pressure readings of 160 mm. or higher were more frequent among examinations in a rural area of Cattaraugus County, N. Y., than was reported by an urban hospital out-patient service.

A recent study of blood pressure at specific ages (24) uses as a measure of high blood pressure a reading of 150 mm. or more of systolic, combined with 90 mm. or more of diastolic, pressure. The same criterion is used in every age group. The percentage of persons

TABLE 4.—Age-specific prevalence of high blood pressure as defined variously by systolic and diastolic pressure—members of white rural borrower families examined by the Farm Security Administration, 19 localities,¹ 1940

Age	Number with known blood pressure		White male					White female				
			140+ sys- tolic with 90+ dias- tolic	150+ sys- tolic with 90+ dias- tolic	150+ sys- tolic with 100+ dias- tolic	150+ sys- tolic	90+ dias- tolic	140+ sys- tolic with 90+ dias- tolic	150+ sys- tolic with 90+ dias- tolic	150+ sys- tolic with 100+ dias- tolic	150+ sys- tolic	90+ dias- tolic
	Male	Fe- male	Percent with specified blood pressure									
15-24-----	722	767	4.6	2.2	0.8	6.8	7.1	3.1	1.4	0.3	4.8	5.5
25-34-----	531	608	7.9	4.7	1.5	9.8	12.2	11.0	6.1	2.6	9.4	16.0
35-44-----	617	597	13.9	8.8	4.7	12.0	18.3	25.5	19.8	10.2	26.6	32.2
45-54-----	519	415	28.7	22.9	11.0	29.9	31.6	46.0	39.8	24.6	50.8	50.4
55-64-----	255	141	43.9	39.2	21.6	55.2	45.5	64.5	61.7	36.2	72.3	65.2
65 and over--	99	45	48.5	45.5	27.3	60.6	50.5	64.4	55.6	37.8	75.6	73.3

¹ Listed in table 1.

at specific ages who have high blood pressure must necessarily increase with age. In these farm data the percentage with high blood pressure so defined, at ages 20, 40, and 60 years is approximately 2, 10, and 40 percent for men and 2, 20, and 60 percent for women, respectively. High blood pressure has also been defined as other combinations of systolic and diastolic pressure; some of these are shown for the farm data in table 4.

The 'only measure of high blood pressure which can be used to compare the farm data with the recent study made by Master, Marks, and Dack (24) of blood pressure readings on some 15,000

persons, is a systolic pressure of 150 mm. or more. Such a comparison is shown in figure 5; here also, the farm population shows a comparatively large percentage of persons with high blood pressure at specific ages.

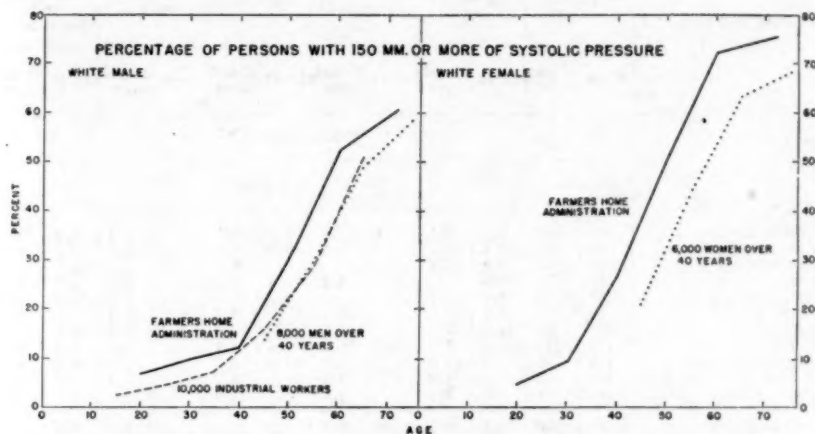


FIGURE 5.—Percentage at specific ages of white males and females with 150 millimeters or more systolic blood pressure—rehabilitation farm families (FSA); 10,000 male industrial workers (PHS) (7); and data from Master, Marks and Dack, examinations of persons over 40 years of age.

In computing the percentage of the population with high blood pressure at specific ages the criterion used for high blood pressure, so far as the author has found in a review of the literature, may vary but is always the same figure applied in every age group. Some allowance might well be made for a normal increase in mean blood pressure with advancing age from which to measure high or above-the-mean blood pressure at successive ages. From table 2 of this study mean systolic and diastolic pressures in three age groups are approximately as follows:

Age	Male		Female	
	Mean systolic pressure (mm.)	Mean diastolic pressure (mm.)	Mean systolic pressure (mm.)	Mean diastolic pressure (mm.)
Under 45-----	130	80	130	80
45-54-----	140	80	150	90
55-64-----	150	90	160	90
65 and over-----	160	90	170	95

It is obvious that when age-specific criteria are used, as could be done for the general population from a table similar to the above, the

TABLE 5.—Prevalence of specified circulatory conditions as recorded for white persons in two broad age groups—members of rural borrower families examined by the Farm Security Administration, 11 localities, 1940

County and State	Total examined		Heart disease only ¹		Heart disease and hypertension ¹		Hypertension only ¹		Arteriosclerosis only ¹		Blood pressure Sys: 150+ and Dias: 90+	
	15-44	45 and over	15-44	45 and over	15-44	45 and over	15-44	45 and over	15-44	45 and over	15-44	45 and over
White male												
	Number		Percent									
Aroostook, Maine.....	142	72	9.2	1.4	1.4	5.6	18.1	8.3	4.9	29.2		
Champaign, Ohio.....	92	39	30.4	23.1	2.6	3.3	5.1	2.6	2.2	17.9		
Montgomery, Ind.....	65	45	9.2	17.8			6.7			15.6		
Callaway, Mo.....	137	72	3.6		4.2	5.8	9.7	4.2	2.9	20.8		
Spotsylvania, Va.....	29	22	3.4	18.2		6.9	27.3	3.4	4.5	45.5		
Avery, N. C.....	46	23	23.9	4.3	30.4		4.3	17.4		43.5		
Kershaw, S. C.....	127	63	15.7	7.9	3.1	31.7	27.0	4.7	22.2	74.6		
Levy, Fla.....	127	71	13.4	7.0	3.9	28.2	8	14.1	2.8	43.7		
Henderson, Tenn.....	116	33	.9	3.0	.9	3.0	17.2	33.3		45.5		
Pope, Ark.....	149	54	.7	1.9	1.9		3.7	7.4		13.0		
Okfuskee, Okla.....	115	62	.9	3.2	1.6		12.9		1.7	17.7		
11 localities.....	1,145	556	9.1	6.7	1.0	9.7	5.2	14.4	.6	6.3	5.9	32.6
White female												
	Number		Percent									
Aroostook, Maine.....	158	59	3.8	1.7	0.6	15.3	5.7	28.8		12.7	59.3	
Champaign, Ohio.....	91	26	3.3	7.7		3.8	2.2	15.4		6.6	46.2	
Montgomery, Ind.....	83	30	2.4	20.0	1.2	16.7	4.8	13.3		20.5	76.7	
Callaway, Mo.....	121	61	5.0	3.3		4.9	.8	18.0		3.3	47.5	
Spotsylvania, Va.....	32	14	9.4	7.1		7.1	6.3	21.4	7.1	6.3	42.9	
Avery, N. C.....	57	14	7.0	7.1		7.1			7.1	1.8	21.4	
Kershaw, S. C.....	146	31	2.1	6.5	1.4	9.7	5.5	35.5	3.4	15.1	71.0	
Levy, Fla.....	133	55	3.0			18.2	6.0	5.5		.8	25.5	
Henderson, Tenn.....	111	32	6.3	6.3		6.3	2.7	53.1		3.6	56.3	
Pope, Ark.....	176	32	1.7					3.1		8.0	40.6	
Okfuskee, Okla.....	127	45		2.2		2.2		8.9		.8	20.0	
11 localities.....	1,235	399	3.3	4.5	.3	9.0	3.0	18.8	.4	.5	7.4	46.1

¹ Cases of heart disease, hypertension, and arteriosclerosis were recorded by the physician in the following subdivisions and combinations of subdivisions:

Diagnosis	White male		White female	
	15-44	45 and over	15-44	45 and over
Number of cases				
Heart disease only:				
Diseases of the mitral valve.....	6	1		
Other chronic rheumatic heart disease.....	21	4	7	1
Diseases of the coronary arteries and angina pectoris.....	3	1		1
Functional diseases of the heart.....	9	3		
Other diseases of the heart.....	65	21	26	15
Heart disease with arteriosclerosis.....		7	2	1
Heart disease and hypertension:				
Hypertensive cardio-vascular disease.....	10	27	4	35
Hypertensive cardio-vascular disease with arteriosclerosis.....	2	27		1
Hypertension only:				
Hypertensive vascular disease with arteriosclerosis.....	4	30	2	4
Other hypertensive vascular diseases.....	55	50	35	71
Arteriosclerosis only: Arteriosclerosis.....	7	35	5	2
Total number of cases.....	182	206	87	131

percentage of persons with high blood pressure does not increase as rapidly with age as it does when computed from a base which is not age-specific.

Recorded Cases of Heart Disease and Hypertension

Variability in the recorded prevalence of circulatory diseases (table 6) is extreme in these data. The high prevalence of cases of hypertension and arteriosclerosis seen in some counties, however, is on the whole substantiated by blood pressure readings.

Compared with other available data (table 7), which includes National Youth Administration, university student, and Selective Service examinations, these farm data show a relatively high recorded prevalence of cardiovascular disease in young ages, particularly among men. The age-specific prevalence of heart diseases in these data (fig. 6) shows high rates under 30 years for men and boys and under 20 years for women and girls; the increase in the rate is so marked at these young ages, particularly for men, that the assumption is that a comparatively high prevalence of the after effects of rheumatic fever was recorded as heart disease for this low-income farm group. A comparison of these data with the National Youth Administration examinations of boys and girls shows a comparatively high rate among boys (17-19 years) in these farm families, whereas girls have about the same prevalence rates in the two groups. For ages over 30 years the prevalence of heart disease among men in the low-income farm

TABLE 6.—Age-specific prevalence of specified circulatory conditions—members of white rural borrower families examined by the Farm Security Administration, 11 localities,¹ 1940

Age	Total examined		White male				White female			
	Male	Female	Heart disease ² (total)	Hypertension ² (total)	Arteriosclerosis ² (only)	Blood pressure Sys: 150+ and Dias: 90+	Heart disease ² (total)	Hypertension ² (total)	Arteriosclerosis ² (only)	Blood pressure Sys: 150+ and Dias: 90+
	Number		Percent							
All ages.....	3, 000	2, 905	9.5	6.8	1.4	8.3	6.0	5.2	0.2	9.5
Under 5.....	355	378	2.3				2.6			
5-9.....	461	413	7.6				6.1			
10-14.....	483	480	7.2				8.1			
15-19.....	333	316	12.3	6.6	.3	2.7	3.2			.6
20-24.....	145	197	12.4	5.5		3.4	2.0	.5		2.5
25-29.....	150	169	8.7	5.3		3.3	3.0	1.8		3.6
30-34.....	154	190	6.5	7.8		7.8	4.2	3.7		6.8
35-39.....	177	186	11.3	5.1	.6	7.3	3.8	7.5	.5	14.0
40-44.....	186	177	7.5	6.5	2.7	12.4	6.2	9.0	2.3	22.6
45-49.....	155	151	11.0	12.9	5.2	21.9	7.9	19.2	.7	36.4
50-54.....	163	112	12.9	19.6	3.7	27.0	9.8	25.9	.9	42.0
55-59.....	89	71	21.3	32.6	5.6	42.7	21.1	36.6		64.8
60-64.....	77	31	22.1	33.8	7.8	40.3	19.4	38.7		54.8
65 and over.....	72	34	23.6	37.5	13.9	47.2	29.4	44.1		55.9

¹ Listed in table 5.

² See table 5, footnote 1.

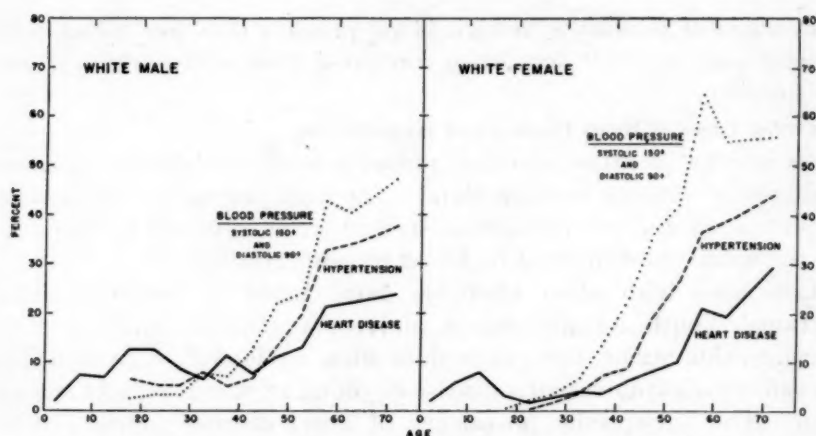


FIGURE 6.—Age-specific prevalence of heart disease (total), high blood pressure or hypertension (total), and percentage at specific ages of white males and females with 160 mm. or more systolic and 90 mm. or more diastolic pressure—members of rural borrower families examined by the Farm Security Administration, 11 localities, 1940.

group can be compared with that recorded for urban workers in selected industries and with the Life Extension Institute examinations of urban industrial policyholders (table 7). All three groups show about the same recorded prevalence of heart disease and of hypertension, 35-54 years, although a somewhat lower prevalence of heart disease might be expected for the rural group on the basis of the low mortality rate for heart disease in rural areas among the general population.

TABLE 7.—Reported prevalence of cardiovascular disease among white persons

Cardiovascular disease	School children ¹	National Youth Administration ²		University students ³	Selective Service registrants ⁴		10,000 industrial workers ⁵		Life Extension Institute (total)			
	Approximately 6-15 years	16-24 years		Student age	18-46 years	35-44 years	45-54 years	35-44 years	45-54 years	35-44 years	45-54 years	
	Both sexes	Male	Female	Male	Male	Male		Male ⁶		Female ⁷		
	Percent											
Heart disease (total).....	1.0-2.0	4.8	6.4	3.6	3.3	9.9	12.8	9.2	12.4	15.2	19.8	
High blood pressure and arteriosclerosis (total) ⁸	-----	-----	-----	1.1	1.7	11.1	18.2	11.2	18.8	9.4	18.7	

¹ From Goodman and Prescott (15).

² From McDowell and Meroney (25).

³ From Wood (46). Ages center at 20 years.

⁴ From Medical Statistics (26). Ages center at 24 years.

⁵ From Britten and Thompson (7).

⁶ From Sydenstricker and Britten (40).

⁷ From Britten (6).

⁸ The content of diagnostic groups varies with different data; however, the percentages quoted seem to represent best the broad group of "high blood pressure and arteriosclerosis" for a comparison with equivalent farm data.

A higher age-specific prevalence rate of both heart disease and high blood pressure or hypertension is recorded for Negroes than whites in these farm data (table 8).

TABLE 8.—*Age-specific prevalence of specified circulatory conditions for Negro and white persons—members of rural borrower families examined by the Farm Security Administration, 5 localities,¹ 1940*

Age	Total examined		Heart disease ¹ (total)	Hyper- tension ¹ (total)	Blood pressure Sys: 150+ and Dias: 90+	Heart disease ¹ (total)	Hyper- tension ¹ (total)	Blood pressure Sys: 150+ and Dias: 90+
All ages.....	Negro male	Negro female	Negro male			Negro female		
	Number		Percent					
	494	499	13.2	16.6	19.2	8.0	16.8	19.2
	Under 5.....	48	72	4.2	.....	1.4	.....	.....
	5-14.....	185	169	4.3	.5	4.1	.6	.....
	15-24.....	100	93	9.0	13.0	7.5	4.3	6.5
	25-34.....	24	39	4.2	8.3	.....	30.8	28.2
	35-44.....	31	61	19.4	35.5	14.8	44.3	54.1
	45-54.....	57	40	35.1	47.4	30.0	60.0	75.0
	55-64.....	35	18	34.3	51.4	22.2	66.7	72.2
65 and over.....	14	7	50.0	71.4	78.6	.....	57.1	42.9
All ages.....	White male	White female	White male			White female		
	Number		Percent					
	1,430	1,360	8.6	8.0	10.3	3.2	4.2	7.6
	Under 5.....	157	166	1.3	.....	1.2	.....	.....
	5-14.....	454	403	2.9	.....	2.0	.....	.....
	15-24.....	237	277	10.5	3.8	3.0	1.8	.....
	25-34.....	141	162	5.7	4.3	5.0	.6	3.1
	35-44.....	169	175	9.5	8.3	16.0	5.1	8.6
	45-54.....	158	116	13.9	20.9	28.5	6.0	13.8
	55-64.....	81	49	32.1	44.4	51.9	16.3	32.7
65 and over.....	33	12	33.3	48.5	57.6	33.3	41.7	58.3

¹ Spotsylvania County, Va., Kershaw County, S. C., Levy County, Fla., Pope County, Ark., and Okfuskee County, Okla.

² See table 5, footnote 1.

The percent with arteriosclerosis only, all ages, in 5 southern localities is: 3.4, 0.0, 2.0, and 0.4 percent for Negro males, Negro females, white males, and white females, respectively; and 8.5 percent for Negro males, 45 years and over.

Correlation of Systolic Blood Pressure With Height and Weight

The correlation of systolic blood pressure with height and weight for these measurements of members of low-income farm families agrees with the results of an analysis made by Reed and Love (29) of similar measurements on United States Army officers. Systolic blood pressure in these data shows no correlation with height for ages over 25 years for men and for ages over 35 years for women; the correlation coefficient for systolic blood pressure with weight is small, but significant from 15 to 54 years of age for both men and women, and persists when height is held constant (table 9). Mean systolic blood pressure increases markedly after 45 years for men and after 35 years

for women in these data; mean height shows a slight increase from 15 to 35 years of age for men and a slight decrease thereafter for both men and women; mean weight increases from 15 to 54 years of age for both men and women. The variability of systolic blood pressure increases markedly with age, that of weight also increases with age, while that of height is practically the same at all ages over 15 years (table 9).

TABLE 9.—Distribution constants of systolic blood pressure, height, and weight in specific age groups; and the correlation of systolic blood pressure with height and weight—members of white rural borrower families examined by the Farm Security Administration, 19 localities, 1940

Constant and probable error	Age					
	15-24	25-34	35-44	45-54	55-64	65 and over
White male						
Systolic blood pressure (mm.):						
Mean.....	127.7±0.34	131.1±0.41	132.2±0.43	139.9±0.66	153.0±1.17	159.4±1.92
Median.....	127.4±.43	129.9±.51	131.1±.54	136.9±.83	147.7±1.46	154.7±2.40
Standard deviation.....	13.6±.24	13.9±.29	16.0±.31	22.4±.47	27.8±.83	28.3±1.35
Height (inches):						
Mean.....	67.2±.08	68.3±.08	68.2±.07	67.6±.07	66.9±.12	66.9±.20
Median.....	67.5±.10	68.2±.11	68.2±.09	67.6±.09	67.0±.15	66.7±.26
Standard deviation.....	3.2±.06	2.8±.06	2.7±.05	2.5±.05	2.8±.08	3.0±.14
Weight (pounds):						
Mean.....	131.8±.54	147.8±.56	150.7±.65	151.2±.74	147.2±1.06	145.3±1.97
Median.....	126.9±.67	141.2±.70	142.4±.82	142.6±.93	138.2±1.33	135.5±2.47
Standard deviation.....	21.3±.38	19.0±.40	23.9±.46	24.9±.53	25.0±.75	28.5±1.39
Correlation between—						
Blood pressure and height.....	+ .122±.025	+ .022±.030	+ .039±.027	-.013±.030	+ .013±.042	-.093±.069
Blood pressure and weight.....	+ .217±.024	+ .208±.028	+ .177±.027	+ .232±.028	+ .141±.042	+ .072±.069
Height and weight.....	+ .678±.013	+ .390±.025	+ .449±.022	+ .363±.026	+ .399±.036	+ .231±.065
Blood pressure and height for constant weight.....	-.036	-.066	-.047	-.114	-.047	-.113
Blood pressure and weight for constant height.....	+ .185	+ .216	+ .179	+ .255	+ .148	+ .096
White female						
Systolic blood pressure (mm.):						
Mean.....	124.6±0.31	128.1±0.40	137.0±0.59	152.0±0.96	166.0±1.75	174.4±3.19
Median.....	123.4±.39	127.0±.50	133.3±.74	147.5±1.20	162.8±2.20	173.3±4.00
Standard deviation.....	12.7±.22	14.6±.28	21.4±.42	29.0±.68	30.8±1.24	31.7±2.26
Height (inches):						
Mean.....	63.8±.06	63.8±.07	63.6±.07	63.3±.08	62.8±.13	61.7±.25
Median.....	63.8±.09	63.9±.08	63.6±.08	63.6±.11	62.8±.17	61.6±.31
Standard deviation.....	2.6±.04	2.6±.05	2.4±.05	2.5±.06	2.3±.09	2.4±.18
Weight (pounds):						
Mean.....	122.7±.62	135.7±.89	144.1±.92	147.2±1.23	145.8±1.96	134.2±2.92
Median.....	113.5±.77	124.9±1.11	134.9±1.16	135.7±1.54	139.7±2.45	125.0±3.65
Standard deviation.....	24.8±.44	31.1±.63	32.9±.65	36.6±.87	34.0±1.38	28.4±2.06
Correlation between—						
Blood pressure and height.....	+ .109±.024	+ .113±.027	+ .057±.028	+ .065±.033	+ .003±.058	+ .066±.102
Blood pressure and weight.....	+ .224±.024	+ .329±.026	+ .214±.027	+ .282±.031	+ .174±.056	+ .062±.102
Height and weight.....	+ .380±.021	+ .242±.027	+ .271±.026	+ .257±.031	+ .185±.055	+ .328±.091
Blood pressure and height for constant weight.....	+ .026	+ .036	-.002	-.008	-.030	+ .048
Blood pressure and weight for constant height.....	+ .199	+ .313	+ .206	+ .275	+ .176	+ .043

Summary

During the course of general physical examinations of farm owners and their families receiving rehabilitation loans from the Farm Security Administration a record was made of systolic and diastolic blood pressure and of the prevalence of circulatory and other defects found by the medical examiner. Members of the farm families were brought into a central clinic in each locality and the examinations conducted by a staff of physicians; the blood pressure of all persons 15 years of age and over was read with a manometer and the heart examined with a stethoscope.

Variability in mean blood pressure among counties in different geographic sections is moderate, although a few counties show significant deviations from the mean for all localities. Means and standard deviations of systolic and diastolic blood pressure are shown for both white and Negro males and females.

Age-specific mean systolic blood pressure for members of low-income farm families is higher than that in recorded observations for other population groups, mainly urban; mean diastolic blood pressure for the farm group does not differ greatly from that recorded for urban groups.

The prevalence of heart disease and hypertension or high blood pressure as stated by the examining physician is shown specific for color, sex, and age; males under 30 years of age in these data have a relatively high prevalence of heart disease; over 30 years of age the farm rates are similar to those for male industrial workers examined by the Public Health Service, and for urban life insurance policyholders.

Systolic blood pressure shows no correlation with height; the correlation coefficient for systolic blood pressure with weight is small, but significant, and persists when height is held constant.

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Plague Infection Reported in the United States in 1947¹

Human Case

A fatal case of plague was reported in Modoc County, Calif., on June 30, 1947, confirmed by animal inoculation in the State laboratory. The plague victim was a 12-year-old boy living in Alturas. It was believed that he acquired the infection in the vicinity of the Fitzhugh Ranger Station, about 13 miles southeast of Alturas. Later in the year, wood rats in this area were found to be infected. (See the following table.) Plague infection was reported found in Modoc County first in 1934, and subsequently in 1935, 1936, and 1942.

This is the first human case of plague acquired in nature in the United States since 1943, in which year one case was reported, and a death occurred in a case which was reported late in 1942. Both were in Siskiyou County, which borders Modoc County on the west of the latter county.² A case of primary pneumonic plague, in which the infection was acquired in the Laboratory, occurred in San Francisco in 1944.³

Plague Infection in Wild Rodents and Their Ectoparasites

During the calendar year 1947, plague infection was reported in wild rodents or their ectoparasites in the six western States: Arizona, California, Colorado, Kansas, Washington, and Texas. The species of animals found infected by inoculation of tissue or pools of ectoparasites were ground squirrels, tree squirrels, chipmunks, field mice, meadow mice, pocket mice, white-footed deer mice, grasshopper mice, kangaroo mice, wood rats, pack rats, prairie dogs, and marmots. The ectoparasites in pools of which infection was found by mass inoculation were principally fleas, but in one instance infection was found in a pool of lice and some pools of fleas included ticks and lice.

The farthest east that plague infection has been reported to date in wild rodents or their ectoparasites is Scott County, Kans., where infection was proved in a pool of fleas from prairie dogs and in a specimen of tissue from one prairie dog in 1946. The locality is approximately on the 100th meridian west longitude.

The fact that human cases of plague are still occurring in the United States, and the gradual extension to the east of proved areas

¹ From the Division of Public Health Methods. A consolidation of reports received from the Public Health Service Plague Laboratory in San Francisco, Calif., and the California and Texas State Departments of Health and published currently in the PUBLIC HEALTH REPORTS. For a similar 1946 summary see PUBLIC HEALTH REPORTS 62: 1336 (1947), and for references to reports for earlier years see PUBLIC HEALTH REPORTS 59: 911 (1944).

² Pub. Health Rep. 58: 1361 (1943).

³ Pub. Health Rep. 59: 962 (1944).

of wild rodent infection indicates that the disease is still to be reckoned with in this country. Although in recent years there has been no outbreak of plague in the United States, Dr. R. H. Creel has pointed out that "Unless controlled, plague infection can be expected to extend into any city in the western States having a substantial rat population. Likewise, there is no reason to assume that the infection will not spread to rodents of the Great Plains and into the Mississippi Valley and eastern United States."⁴

The reports summarized in the accompanying table are not to be interpreted as a delineation of all areas in which plague infection was present in wild rodents of the western States in 1947, nor a quantitative measure of such infection. The field surveys are limited by the number of personnel, the areas in which the surveys are conducted, and the seasonal periods favorable for field operations. At best, these field surveys are essentially sampling procedures. However, in recent years they have demonstrated a wide biologic and geographic distribution of plague infection in western United States and a gradual extension eastward of the area of proved infection.

In the reports presented in the table, infection in animal tissue and ectoparasites was proved in each instance by laboratory procedures. The identification of the species is given as reported by the respective laboratories.

TABLE 1.—*Plague infection in wild rodents and their ectoparasites reported to the Division of Public Health Methods, Public Health Service during 1947*

State and county	Date	Infection found in—
ARIZONA:		
Navajo County.....	Apr. 2 ²	A pool of 96 fleas and 1 tick from 2 ground squirrels, <i>Citellus variegatus</i> , taken 10 miles northeast of Show Low on U. S. Highway No. 60.
CALIFORNIA:		
El Dorado County....	Sept. 12 ¹	Organs from 1 ground squirrel, <i>C. beecheyi</i> , taken in Fallen Leaf Lake area, Lake Tahoe.
Do.....	Sept. 15 ¹	Pool of tissue from 3 Tamarack squirrels, <i>Sciurus</i> sp., taken 1 mile east of Tahoe Valley post office.
Kern County.....	Sept. 19 ¹	A pool of 12 fleas from 6 ground squirrels, <i>C. beecheyi</i> , taken at the Girls Scout Camp, 12 miles west of Lebec.
Do.....	Sept. 26 ¹	A pool of 169 fleas from 36 ground squirrels, <i>C. beecheyi</i> , taken 1 mile east and 8 miles north of Lebec.
Lassen County.....	June 23 ¹	A pool of 158 fleas from 2 marmots, <i>Marmota</i> sp., taken in Ash Valley, 17 miles east and 10 miles south of Adin, Modoc County.
Do.....	June 27 ¹	A pool of 92 fleas from 16 ground squirrels, <i>C. oregonus</i> , taken along the Great Northern Railroad right-of-way, 2 miles south of Nubieber.
Do.....	June 30 ¹	A pool of 147 lice from 14 ground squirrels, <i>C. oregonus</i> , taken 3 miles south and 1 mile east of Nubieber, and a pool of 129 fleas from 34 ground squirrels, same species, taken 1 mile west and 2 miles south of Nubieber.
Modoc County.....	June 25 ¹	Tissue from 4 wood rats, <i>Neotoma</i> sp., taken at the Fitzhugh Ranger Station, 4 miles south and 9 miles east of Alturas.
Do.....	July 8 ¹	Tissue from 1 ground squirrel, <i>C. oregonus</i> , taken 5 miles north and 8 miles east of Alturas.
Mono County.....	July 17 ¹	A pool of 29 fleas from 65 ground squirrels, <i>C. beldingi</i> , taken on the Bodie town site, 11 miles east and 4 miles south of Bridgeport.
Do.....	Aug. 15 ¹	A pool of 47 fleas from 22 ground squirrels, <i>C. beldingi</i> , and a pool of 22 fleas from 6 ground squirrels, <i>C. fisheri</i> (<i>Otopermophilus grammurus fisheri</i>), taken at the Mammoth Dump, ½ mile east of the Mammoth post office.

See footnotes at end of table.

⁴ Am. J. Pub. Health, 31: 1162 (1941).

TABLE 1.—Plague infection in wild rodents and their ectoparasites reported to the Division of Public Health Methods, Public Health Service during 1947—Continued

State and county	Date	Infection found in—
CALIFORNIA—continued		
Monterey County.....	June 20 ¹	A pool of 200 fleas from 28 ground squirrels, <i>C. beecheyi</i> , taken 25 miles south of Monterey.
Do.....	June 27 ¹	A pool of 200 fleas from 22 ground squirrels, <i>C. beecheyi</i> , taken 31 miles south of Monterey.
Placer County.....	July 8 ¹	A pool of 15 fleas from 6 chipmunks, <i>Eutamias</i> sp., taken 1 mile north of King's Beach, and a pool of 18 fleas from 16 chipmunks, same species, taken 2 miles north of King's Beach.
San Luis Obispo Co....	Aug. 8 ¹	Pools of 100 fleas from 9 ground squirrels, 200 fleas from 75 ground squirrels, and 200 fleas from 9 ground squirrels, all <i>C. beecheyi</i> , taken on the Santa Margarita ranch 1 mile north of Santa Margarita.
Do.....	Aug. 18 ¹	A pool of 190 fleas from 11 ground squirrels <i>C. beecheyi</i> , taken 1 mile west of Edna, and a pool of 200 fleas from 41 ground squirrels, same species, taken on the Santa Margarita ranch, 2 miles northeast of Santa Margarita.
Do.....	Aug. 25 ¹	A pool of 400 fleas from 82 ground squirrels, <i>C. beecheyi</i> , taken on the Santa Margarita ranch, 2 miles northeast of Santa Margarita.
Do.....	Sept. 3 ¹	A pool of 200 fleas from 25 ground squirrels, <i>C. beecheyi</i> , taken on the Santa Margarita ranch along Highway No. 101.
Siskiyou County.....	Sept. 22 ¹	A pool of 200 fleas from 17 ground squirrels, <i>C. beecheyi douglasii</i> , taken on a ranch 2¼ miles north and 2 miles west of Yreka.
Do.....	Sept. 26 ¹	A pool of 141 fleas, from 8 ground squirrels, <i>C. beecheyi douglasii</i> , taken on a ranch 5 miles east of Montague, and a pool of 206 fleas from 11 ground squirrels, same species, taken on ranch 7 miles east of Grenada.
COLORADO: ³		
Clear Creek County....	Aug. 15 ¹	A pool of 95 fleas from 25 ground squirrels, <i>C. richardsoni elegans</i> , taken Aug. 7, 15 miles east of Georgetown on Highways Nos. 6 and 40.
Custer County.....	July 21 ¹	Tissue of lungs and nodes from 1 prairie dog, <i>Cynomys</i> sp., taken at the Custer County airfield, east edge of Silvercliff.
La Plata County.....	July 18 ¹	A pool of 74 fleas from 2 marmots, <i>Marmota</i> sp., taken 15-20 miles north of Durango on U. S. Highway No. 550.
Do.....	July 19 ¹	A pool of 46 fleas from 4 ground squirrels, <i>C. variegatus</i> , taken in same locality.
Park County ⁴	July 21 ¹	Tissue of spleen, liver, and lung from 1 prairie dog, <i>Cynomys</i> sp., found dead, 10 miles east and 5 miles north of Hartsell, and a pool of 88 fleas from 47 prairie dogs, same species, taken 20 miles south of Hartsell.
Do.....	July 25 ¹	A pool of 59 fleas from 28 prairie dogs, same species, taken 10 miles east and 5 miles south of Hartsell.
Park County.....	July 28 ¹	A pool of 56 fleas from 39 prairie dogs, same species, taken 12 miles southwest of Hartsell, and a pool of 14 fleas from 9 prairie dogs, same species, taken 5 miles southeast of Fairplay on State Highway No. 9.
Do.....	July 29 ¹	A pool of 113 fleas from 48 prairie dogs, same species, taken 20 miles south and 3 miles east of Fairplay.
Do.....	July 30 ¹	A pool of 31 fleas from 11 prairie dogs, same species, taken 10 miles south of Fairplay on U. S. Highway No. 285.
Do.....	Aug. 5 ¹	A pool of 8 fleas and 1 tick from 19 ground squirrels, <i>C. lateralis</i> , taken 5 miles west of Como.
Do.....	Aug. 11 ¹	A pool of 150 fleas from 60 ground squirrels, <i>C. elegans</i> , taken 5 miles north and 5 miles west of Fairplay.
Do.....	Aug. 12 ¹	A pool of 130 fleas from 16 prairie dogs, <i>Cynomys</i> sp., taken July 30, 10 miles east and 5 miles south of Jefferson.
KANSAS:		
Logan County.....	Aug. 19 ²	A pool of 6 fleas from 5 grasshopper mice, <i>Onychomys</i> sp., and 538 fleas from 62 prairie dogs, <i>Cynomys</i> sp., taken 2 miles north and 2 miles west of Russel Springs.
OREGON:		
Klamath County.....	June 2 ²	Tissue from spleen, liver, and lung from 1 marmot, <i>Marmota flaviventris</i> , taken 2-7 miles southeast on Keno road to Highway No. 97.
Lake County.....	June 11 ²	A pool of 8 fleas from 24 ground squirrels, <i>C. oregonus</i> , taken in Drake Flats, 22 miles northeast of Lakeview on road to Plush.
TEXAS:		
Dawson County.....	May 15 ²	A pool of 50 fleas from 6 prairie dogs, <i>Cynomys</i> sp., taken in a locality 1 mile north and 1½ miles west of a point 12 miles southwest of Lamesa. ⁴
Do.....	Oct. 2 and 3 ²	A pool of 141 fleas from 14 pack rats, <i>Neotoma micropus</i> , taken 8 miles west of Lamesa.

See footnotes at end of table.

TABLE 1.—*Plague infection in wild rodents and their ectoparasites reported to the Division of Public Health Methods, Public Health Service during 1947—Continued*

State and county	Date	Infection found in—
WASHINGTON:		
Kittitas County.....	May 13 ¹	Pools of 132 fleas from 70 meadow mice, <i>Microtus</i> sp., 22 fleas from 13 pocket mice, <i>Perognathus</i> sp., and 200 fleas from 85 white-footed deer mice, <i>Peromyscus</i> sp., taken at the head of Squaw Creek.
Do.....	May 15 ²	Pools of 16 fleas from 56 meadow mice, <i>Microtus</i> sp., 8 fleas from 26 white-footed deer mice, <i>Peromyscus</i> sp., and 6 fleas from 16 pocket mice, <i>Perognathus</i> taken at the head of Squaw Creek.
Do.....	May 21 ²	A pool of 94 fleas from 28 chipmunks, <i>Eutamias</i> sp., taken 8 miles west of Vantage.
Do.....	May 23 ²	Pools of 150 fleas from 66 white-footed deer mice, <i>Peromyscus</i> sp., and 200 fleas from 128 meadow mice, <i>Microtus</i> sp., taken on the north slope of Saddle Mountain ridge above Boylston railroad station.
Do.....	June 4 ¹	A pool of 137 fleas from 78 deer mice, <i>Peromyscus</i> sp., and a pool of 13 fleas from 11 kangaroo mice, <i>Perognathus</i> sp. (so reported, possibly <i>Zapus</i> sp.—Ed.), taken 8 miles west of Vantage.
Do.....	June 5 ²	A pool of 126 fleas from 75 meadow mice, <i>Microtus</i> sp., and a pool of 119 fleas from 43 chipmunks, <i>Eutamias</i> sp., taken on the Kittitas County Divide above Hansen's Creek.
Do.....	June 12 ²	A pool of 197 fleas from 106 meadow mice, <i>Microtus</i> sp., a pool of 200 fleas from 74 white-footed deer mice, <i>Peromyscus</i> sp., and a pool of 200 fleas from 90 chipmunks, <i>Eutamias</i> sp., taken 6 miles southeast of Kittitas.
Do.....	Aug. 14 ²	A pool of 76 fleas from 46 chipmunks, <i>Eutamias</i> sp., taken 6 miles southeast of Kittitas, and a pool of 230 fleas from 60 field mice, <i>Peromyscus</i> sp., taken 6 miles southeast of Kittitas.
Yakima County.....	March 22 ²	A pool of 91 fleas from 59 meadow mice, <i>Microtus</i> sp., taken 12 miles east of Yakima.
Do.....	April 11 ²	Pools of 18 fleas from 19 pocket mice, <i>Perognathus</i> sp., 89 fleas from mice of the same species, 6 fleas from 1 ground squirrel <i>C. townsendii</i> , and 30 fleas from a field mouse, <i>Microtus</i> sp., all taken 6 miles east of Firing Range Headquarters.
Do.....	May 9 ²	Pools of 94 fleas from 87 field mice, <i>Microtus</i> sp., 50 fleas from 2 ground squirrels, <i>C. townsendii</i> , and 34 fleas from 11 chipmunks, <i>Eutamias</i> sp., all taken 6 miles east of Firing Range Headquarters.
Yakima-Kittitas County line.	Apr. 25 ²	Pools of 60 fleas from 108 meadow mice, <i>Microtus</i> sp., and 45 fleas from white-footed mice <i>Peromyscus</i> sp., taken at top of Umatanum Ridge.

¹ Date specimen was proved positive.² Date specimen was collected.³ Plague infection in wild rodents in Colorado was first reported in San Miguel County in 1941 and was subsequently found in Baca, Bent, Huerfano, Larimer and Las Animas Counties.⁴ In July 1947 a widespread epizootic was reported among prairie dogs in Park County, and specimens from Hartsell and Fairplay were found positive for plague. A number of deaths of cattle in the general area were also reported at the same time.⁵ This locality is about 15 miles southeast of Cochran County where plague infection in wild rodents was first reported in Texas in 1946.

DEATHS DURING WEEK ENDED JULY 24, 1948

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended July 24, 1948	Correspond- ing week, 1947
Data for 91 large cities of the United States:		
Total deaths.....	7,865	7,953
Median for 3 prior years.....	8,095	.....
Total deaths, first 30 weeks of year.....	279,323	278,418
Deaths under 1 year of age.....	624	715
Median for 3 prior years.....	652	.....
Deaths under 1 year of age, first 30 weeks of year.....	19,758	22,345
Data from industrial insurance companies:		
Policies in force.....	71,001,899	67,250,156
Number of death claims.....	10,658	11,794
Death claims per 1,000 policies in force, annual rate.....	7.8	9.1
Death claims per 1,000 policies, first 30 weeks of year, annual rate.....	9.6	9.6

INCIDENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED JULY 31, 1948

Summary

The incidence of poliomyelitis increased from 981 cases reported last week to 1,215 for the current week, as compared with 911 (the highest in the past 5 years) for the corresponding week of 1946 and a 5-year median of 391. Of 25 States reporting currently 10 or more cases each, 21 showing increases reported 1,027 cases (last week 770). The 17 States reporting more than 20 cases currently are as follows (last week's figures in parentheses): *Increases*—California 224 (192), North Carolina 212 (206), Texas 82 (68), New York 51 (33), South Carolina 50 (35), Iowa 47 (23), Virginia 42 (18), Minnesota 38 (22), Oklahoma 33 (27), Illinois 32 (22), Nebraska 28 (23), Tennessee 28 (8), Pennsylvania 24 (15), Florida 23 (16), Georgia 21 (9); *decreases*—Ohio 44 (48), New Jersey 21 (23). Of the total of 5,451 cases reported since March 20 (average date of seasonal low incidence), 3,013 cases (55 percent) occurred in 3 States—1,079 in North Carolina, 995 in California, and 939 in Texas. No other State has reported more than 168 cases for that 19-week period. Other than North Carolina, California and Texas, only 10 States have reported more than 50 cases during the 3-week period ended July 31, and only 3 have reported more than 75 cases—Ohio 117, New York 103, and South Carolina 93.

Of 32 cases of Rocky Mountain spotted fever reported (last week 34, 5-year median 28), 28 occurred in the South Atlantic and South Central areas, and 1 each in New Jersey, Indiana, Illinois, and Colorado.

One case of smallpox was reported during the week, in Idaho. The total for the year to date is 48, as compared with 142 last year (which was the lowest number for a corresponding period of the past 5 years), and a 5-year median of 270.

A total of 8,295 deaths was recorded during the week in 93 large cities in the United States, as compared with 7,992 last week, 8,447 and 7,986, respectively, for the corresponding weeks of 1947 and 1946, and a 3-year (1945-47) median of 8,152. The total to date is 292,859, as compared with 292,455 for the corresponding period last year. Infant deaths totaled 691, as compared with 627 last week and a 3-year median of 671. The cumulative figure is 20,825, as compared with 23,423 for the same period last year.

Telegraphic case reports from State health officers for week ended July 31, 1948

[Leaders indicate that no cases were reported]

Division and State	Diphtheria	Encephalitis, infectious	Influenza	Meningitis, meningococcal	Polio-myelitis	Rocky Mountain spotted fever	Scarlet fever	Tularia	Typhoid; paratyphoid fever ^d	Whooping cough
NEW ENGLAND										
Maine				(1)	3		12		1	9
New Hampshire					1					2
Vermont				1			4			18
Massachusetts	4			2	5		38			34
Rhode Island							9		1	1
Connecticut					10		7		1	9
MIDDLE ATLANTIC										
New York	3	1	1	3	51		33		3	92
New Jersey	1			2	21	1	12		1	79
Pennsylvania	3		(b)	3	24		22		5	60
EAST NORTH CENTRAL										
Ohio	6		2	2	44		39		2	76
Indiana	3		1		19	1	6		2	14
Illinois	1	2		7	32	1	21		1	56
Michigan				2	18		19		4	26
Wisconsin				1	15		16			41
WEST NORTH CENTRAL										
Minnesota	2		1	3	38		3			3
Iowa					47		5	1		6
Missouri	1			1	17		1	1	2	11
North Dakota		1								1
South Dakota					2		2			3
Nebraska			4		28		7			5
Kansas	1			2	8		3	1		29
SOUTH ATLANTIC										
Delaware					10					
Maryland	5				4	2	4		3	26
District of Columbia				1	4	1				7
Virginia	2		228	3	42	4	10		8	40
West Virginia	3		2	2	9	2	9		5	7
North Carolina	5			3	212	9	12	1	4	67
South Carolina	11		118	2	50				3	64
Georgia	6		4		21	2	2		13	20
Florida	9		1		23		3		2	9
EAST SOUTH CENTRAL										
Kentucky	3				11	1	4		5	40
Tennessee	2		7	1	28	3	10			22
Alabama	6	2		6	9	2	4		1	16
Mississippi	3		7	3	8		2		2	1
WEST SOUTH CENTRAL										
Arkansas			35		9			1	4	12
Louisiana	1				5		2		9	5
Oklahoma	4		4		33	2	11		4	13
Texas	20	1	228	2	82		10		11	135
MOUNTAIN										
Montana					1		1			3
Idaho			5		9		1			4
Wyoming					13					
Colorado			9		2	1	3	1		15
New Mexico		1		1	5		1			6
Arizona			11		1		1			7
Utah	4				5		2	1		6
Nevada										
PACIFIC										
Washington	2		1		9		6			7
Oregon			5		3		6			21
California	2	3	10	1	224		32		7	61
Total	113	11	691	54	1,215	32	395	7	94	1,189
Median, 1943-47	164	15	571	111	391	28	677	23	163	3,115
Year to date, 30 weeks	4,919	275	138,815	12,121	5,798	318	54,945	599	1,851	54,575
Median, 1943-47	6,743	319	190,197	5,881	2,439	284	95,462	548	2,299	76,405
Seasonal low week ends	July 10		July 31	Sept. 18	Mar. 20		Aug. 14		Mar. 20	Oct. 2
Since seasonal low week	309		182,373	2,958	5,451		77,484		1,377	85,841
Median, 1943-47	479		334,488	8,333	2,042		133,783		1,675	98,452

^a Period ended earlier than Saturday.^b New York City and Philadelphia only, respectively.^c Including cases reported as streptococcal infections and septic sore throat.^d Including cases reported separately as paratyphoid fever and salmonella infections, as follows: Rhode Island 1, New York, 1 (salmonella infection), Pennsylvania, 1 (salmonella infection), Ohio, 1, Michigan, 2, Louisiana, 1, Texas, 2, California, 3.

Smallpox: Idaho, 1 case.

Alaska: Measles, 1, German measles, 11, mumps, 1, whooping cough, 15, bacterial food poisoning, 52.

Territory of Hawaii: Measles, 4, lobar pneumonia, 3, whooping cough, 5.

See footnote 1 next page.

PLAGUE INFECTION IN RIO ARriba COUNTY, NEW MEXICO

Under date of July 28 plague infection was reported proved in a pool of 207 fleas from 58 prairie dogs, *Cynomys gunnisoni*, and a pool of 30 fleas from 6 marmots, *Marmota flaviventris*, taken July 14 at a location in Rio Arriba County, New Mexico, on the Nutritas River road 26 miles southwest of a point 10 miles south of Antonito, Colorado, on U. S. Highway No. 285.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended July 10, 1948.—During the week ended July 10, 1948, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		83		62	279	73	42	48	41	628
Diphtheria				9	2	3		1	1	16
Dysentery:										
Amebic						1				1
Bacillary						1				1
Encephalitis, infectious					1					1
German measles				11	3		1	4	3	22
Influenza		56			6	2				64
Measles		1	1	174	468	37	4	41	68	794
Meningitis, meningococcus				2	2	1				5
Mumps		1		30	81	24	22	18		176
Poliomyelitis				1	4	2	2	9	9	27
Scarlet fever		2	2	34	27	7		4	1	77
Tuberculosis (all forms)		7	18	133	31	50	7	7		253
Typhoid and paratyphoid fever		1		8				1	1	11
Undulant fever				1						1
Venereal diseases:										
Gonorrhea		3	11	95		37	15	36	57	254
Syphilis		3	9	64		12	5		8	101
Type not segregated					130					130
Whooping cough		4		21	9	3	4	10	1	52

NOTE.—No report was received from Prince Edward Island for the above period.

¹ Corrections.—Meningitis, meningococcal: Maine, week ended February 14, no case (instead of 1); week ended July 3, 1 case (instead of 2). Poliomyelitis: Week ended July 10, North Carolina, 129 cases (instead of 130). Typhoid fever: Week ended July 17, Georgia, 5 cases (4 paratyphoid fever), instead of 1.

CUBA

Habana—Communicable diseases—4 weeks ended June 26, 1948.—During the 4 weeks ended June 26, 1948, certain communicable diseases were reported in Habana, Cuba, as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chickenpox.....	1	—	Scarlet fever.....	2	—
Diphtheria.....	9	—	Tuberculosis.....	1	1
Malaria.....	1	—	Typhoid fever.....	6	1
Measles.....	10	—			

Provinces—Notifiable diseases—4 weeks ended June 26, 1948.—During the 4 weeks ended June 26, 1948, cases of certain notifiable diseases were reported in the Provinces of Cuba as follows:

Disease	Pinar del Rio	Habana ¹	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cancer.....	5	8	8	24	1	21	67
Chickenpox.....	1	—	—	—	3	—	4
Diphtheria.....	—	12	1	1	1	—	15
Hookworm disease.....	—	21	—	—	—	—	21
Leprosy.....	—	5	—	—	—	1	6
Malaria.....	1	1	—	2	8	12	24
Measles.....	—	16	2	—	—	1	19
Polioomyelitis.....	—	—	—	1	—	—	1
Rickettsiosis.....	1	—	—	—	—	—	1
Scarlet fever.....	—	2	—	—	—	1	3
Tuberculosis.....	3	11	16	20	2	10	62
Typhoid fever.....	7	16	9	15	10	18	75
Whooping cough.....	—	164	—	—	—	—	164

¹ Includes the city of Habana.

JAMAICA

Notifiable diseases—4 weeks ended June 26, 1948.—During the 4 weeks ended June 26, 1948, cases of certain notifiable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Cerebrospinal meningitis.....	—	1	Erysipelas.....	1	3
Chickenpox.....	6	22	Leprosy.....	—	2
Diphtheria.....	3	2	Tuberculosis (pulmonary).....	37	55
Dysentery, unspecified.....	1	—	Typhoid fever.....	8	60

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-mentioned diseases, except yellow fever, during recent months. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Cholera

India—Bombay and Calcutta.—During the week ended July 17, 109 cases, with 19 deaths, were reported in Calcutta and 17 cases were reported in Bombay.

Indochina (French).—During the week ended July 17, 29 cases, with 21 deaths, were reported in French Indochina, of which 21 cases, 18 deaths, occurred in Cambodia State and 8 cases, 3 deaths, in Laos State.

Plague

British East Africa—Kenya.—One case of plague was reported in Kenya for the week ended July 10, 1948. The last reported case in Kenya occurred in April, but 15 cases, with 9 deaths, were reported during the period January–March, inclusive.

Smallpox

Peru.—During the period January 1–February 29, 211 cases were reported in Peru, including 12 cases in Lima during February.

Venezuela.—During March, 718 cases (alastrim) with 19 deaths were reported in Venezuela, including 68 cases, 1 death, in Maracaibo and 44 cases, 4 deaths, in Puerto La Cruz; and in April, 711 cases, 20 deaths, were reported in Venezuela, including 36 cases, 1 death, in Maracaibo and 5 cases in Puerto La Cruz.

Typhus Fever

Peru.—During January and February, 214 cases of typhus fever were reported in Peru; the largest numbers were reported by Departments as follows: Amazonas 26, Cuzco 22, Junin 13, and Apurimac 11.

Yellow Fever

Argentina.—A fatal case of yellow fever was reported in Cerro Azul, Misiones Territory, Argentina, on July 24. No case has been officially reported in Argentina in the past 25 years or more, although the presence of the virus is reported to have been demonstrated there in 1940.